

4.9. SOLID WASTE MANAGEMENT

Management Measure for Solid Waste:

Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

Management Measure Description

This management measure is focused on controlling the solid waste that can collect at marinas and boat ramp sites if waste receptacles are not provided and conveniently located or if sufficient attention is not given to controlling waste produced during boat cleaning, maintenance, and repair activities. Many of the management practices that are useful for reducing solid waste production during boat maintenance activities are discussed under the Storm Water Runoff management measure because much of the solid waste produced during boat maintenance activities could potentially be carried to surface waters in storm water runoff. Please refer to the discussions of those management practices under the Storm Water Runoff management measure.

The purpose of this management measure is to prevent solid waste from polluting surface waters. Solid waste from boat cleaning, maintenance, and repair might contain harmful substances such as antifoulant paint chips or solvents used to clean or polish metal or wood parts. Solid waste from general activities and marina use, such as plastic bags, cups, cigarette butts, and food containers, also pollutes surface waters and degrades the habitats of aquatic animals and plants. The simple act of picking up and properly disposing of trash goes a long way toward preventing this form of nonpoint source pollution.

Marinas that appear clean because litter is not a visual problem are also more attractive to customers when they are shopping for a place to dock their boats or when the time comes to sign a new slip rental lease. Cleanliness at a marina

can also lead to public recognition and to fewer complaints about flat tires or floating trash in slips. Substantial cleanup costs can be replaced by small initial investments in trash collection and preventive practices (Figure 4-15). The investment in some clean marina practices can be recovered by renting equipment such as dustless sanders or selling items such as filter cloth to boat owners.

Providing sufficient waste receptacles, separating wastes into classes of recyclables, and preventing litter are all accepted practices today and are part of customer service and environmentally friendly management at any public establishment. Marinas generate solid waste through boat maintenance, parties and small social gatherings on boats, restaurants, commercial activity at the marina, and the day-to-day operation of the facility



Figure 4-15. Filter cloths to capture debris. Port Annapolis Marina (Maryland) uses geotextile screening cloths to capture the normal sanding and scraping debris, as well as screws, nails, and other solid materials. This reduces cleanup time and improves appearance (USEPA, 1996: *Clean Marinas—Clear Value*).

(Figure 4-16). If adequate trash and solid waste disposal facilities are not available, solid waste is more likely to end up in surface waters or scattered on the marina grounds, from which it might be blown or washed into surface waters. Marina patrons and employees are more likely to properly dispose of solid waste if given adequate opportunity and disposal facilities. In fact, under federal law, marinas and port facilities must supply adequate and convenient waste disposal facilities for their customers.

Applicability

This management measure is applicable to all marinas. Many of the BMPs mentioned here are directed at boat owners and users, and the information is provided here so that marina managers are aware of the potential nonpoint source pollution problems.

Best Management Practices

- ◆ *Encourage marina patrons to avoid doing any hull maintenance while their boats are in the water.*

The quantity of debris discarded into the marina basin from boat maintenance activities can be minimized by limiting in-the-water boat maintenance to tasks (such as propeller work and hull inspection) that do not remove paint and other solid materials. Dustless sanders can be used for



Figure 4-16. Vacuum sanders. Employees at The Lodge of Four Seasons Marina (Missouri) use vacuum or “dustless” sanders to prepare hulls for painting, reducing waste in the environment and cleanup time (USEPA, 1996: *Clean Marinas—Clear Value*).

topside work in slips, and tarps can be laid out between a boat and the dock to catch any debris.

It can be very difficult to do any hull maintenance while the boat is in the water without some debris falling into the water, and some marina managers require that all work be done on land. If feasible, limit in-the-water hull maintenance to cleaning, preferably without the use of cleansers. (See the Boat Cleaning management measure).

- ◆ *Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal.*

Many people don’t want to put their trash anywhere but in a trash receptacle. For these people, and to encourage those who might otherwise consider dropping trash on the ground to use trash receptacles, waste disposal facilities should be conveniently located near repair and maintenance areas, in parking lots, on docks, and in heavy-use areas, such as near grassy areas where people picnic and in parking lots. Covered trash receptacles do not fill up with water when it rains, do not lose their contents to strong winds, and are less likely to be invaded by scavenging mammals and birds. A loose cover also acts as an indicator that a receptacle is full. The best overfill prevention is frequent emptying by marina staff.

- ◆ *Provide trash receptacles at boat launch sites.*

Trash disposal can be a big problem at boat launch ramps. Boat launch sites are often the most convenient access point to waterbodies, and people from nearby areas, the non-boating public, or those not using the launch ramp for boat launching (e.g., those who use the site for picnicking, swimming, or shore fishing) deposit their trash in the receptacles provided for boaters at the site. If trash receptacles are provided at the launch site, this use can be expected, and a pick-up schedule should be arranged accordingly. Some states (e.g., Maine and Minnesota) have experimented with removing trash receptacles from boat launch sites because overflowing trash receptacles and litter strewn on the ground can result from providing trash receptacles that are insufficient to accommodate the trash from many users. Some people leave their trash atop an

overflowing trash receptacle or beside one rather than taking it with them, thinking it will be picked up by someone whose job it is to do so. Maine and Minnesota have found that when trash receptacles are removed the boating public generally does not complain and takes their trash with them. Litter can actually cease to be a problem after trash receptacles are removed in these instances. If it is decided not to provide trash receptacles, posting signs that ask people to “Pack it out!” can reduce the amount of trash left at the site.

◆ *Provide facilities for collecting recyclable materials.*

Recycling of nonhazardous solid waste such as scrap metal, aluminum, glass, wood pallets, alkaline batteries, paper, fishing line and nets, and cardboard is recommended wherever feasible. Recyclable hazardous solid waste such as used lead-acid batteries and used oil filters, should be stored on an impervious surface, under cover, and sent to or picked up by an approved recyclable materials handler. Often a recycling rebate is paid to the marina for each battery.

Where recycling is available through the municipality, it can be a cost-effective way to decrease trash disposal costs. Public education is necessary if a recycling program is to be effective, though today many people recycle at their homes and already have a “recycle” consciousness. Hazardous and nonhazardous wastes are collected for recycling separately.

Although recycling is a preferred disposal method for reusable materials, not all municipalities provide the service free of charge. Recycling can

The All Seasons Marina (New Jersey) cut its trash bill in half by taking advantage of the local solid waste recycling program. The Cap Sante Boat Haven (Washington) participates in a municipal recycling program and saves 10 to 20 percent on its annual trash removal bill. The marina rents 28 recycling bins from the town and places them at dock heads for customers' convenience (USEPA, 1996: *Clean Marinas—Clear Value*).

be performed in-house, but private service providers are often costly. In such a case, the quantity of waste produced can be lessened by reusing materials and sharing leftover cleaning and maintenance supplies (e.g., excess varnish and paint) among customers. A marina can place a bulletin board up for notices from patrons about extra supplies that are available or can provide some sort of materials exchange program.

◆ *Encourage fishing line collection and recycling or disposal.*

Lost or discarded fishing line and netting in aquatic environments is extremely dangerous to aquatic life. Providing educational materials about the dangers these materials pose and receptacles or a location where marina patrons can dispose of unwanted fishing line and nets could help reduce the magnitude of the problem. Information on debris problems is available from the Center for Marine Conservation at <www.cmc-ocean.org>.

◆ *Provide boaters with trash bags.*

Boaters can be encouraged to bring all of the trash they generate while boating back to an onshore trash receptacle by providing them with a plastic bag or other suitable trash container. Imprinted with a marina's logo, the bag will carry the clear message that the marina cares about the environment.

◆ *Use a reusable blasting medium.*

New technologies are available that make use of a plastic blasting medium that can be reused several times until it wears out. The medium is used to remove antifoulant paint and is vacuumed into a hopper along with the debris for recovery, cleaning, and reclaiming (Figure 4-17). The much smaller volume of debris is collected and sent to a landfill.

◆ *Require patrons to clean up pet wastes and provide a specific dog walking area at the marina.*

Where floating piers extend far from the grassy areas of a marina, dog waste can become a problem, leading to many complaints from staff and boat owners. In many cities, dog owners are required to clean up after their pets when they



Figure 4-17. Associated Marine Technologies (Florida) took prevention of hull sand-blasting debris a step further by switching from a silica wet/dry sandblasting medium to a closed system that employs a reusable plastic material. The facility uses a high-capacity plastic-medium-blasting dry stripper and a media reclaimer that recovers the plastic material and separates it from the paint dust. This process significantly reduces the cost of cleanup and disposal, gives a higher-quality surface, and is much less aggressive on the gelcoats of fiberglass hulls (USEPA, 1996: *Clean Marinas—Clear Value*)

walk them on public streets and parks. A similar policy can take care of this problem at marinas.

BMP Summary Table 9 summarizes the BMPs for Solid Waste Management mentioned in this guidance.

BMP Summary Table 9. SOLID WASTE MANAGEMENT

MANAGEMENT MEASURE: Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

APPLICABILITY: All marinas. Many of the BMPs mentioned here are directed at boat owners and users, and information is provided here so that marina managers are aware of potential nonpoint source pollution problems.

ENVIRONMENTAL CONCERNS: Boat maintenance, painting and repair can result in a range of waste materials, such as sanding debris, antifoulant paint chips, scrap metal, fiberglass pieces, sweepings, and battery lead and acid. Other solid waste such as bottles, plastic bags, aluminum cans, coffee cups, six-pack rings, disposable diapers, wrapping paper, glass bottles, cigarette filters, and fishing line can come from general boating activities and marina use. Living organisms and the habitats of aquatic animals and plants are harmed by this type of debris after it enters the water. A litter-free marina is more attractive to present and potential customers. Reducing a marina's solid waste also reduces overall disposal costs.

SOLID WASTE MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Encourage marina patrons to avoid doing any hull maintenance while their boats are in the water	Marina dock area; recommended	MODERATE; less debris will end up in the marina basin, improving appearance	LOW to MODERATE; any maintenance work on a boat in a slip is more likely to pollute and harder to control; reasonable attempts at cleaner practices will reduce pollution going into the water	LOW to MODERATE	LOW to MODERATE	Ensure that any in-water boat maintenance does not remove paint from the boat hull
Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal	Marina-wide; universally recommended	HIGH; convenient trash containers will be used if placed near access to docks; encourages staff and customers to help keep grounds clean	HIGH; covers control animal and bird access and prevent windblown litter from entering the water	LOW per unit	LOW to MODERATE	Secure containers near docks or the water to avoid accidental spillage; label containers to promote placement of different waste types in separate containers
Provide trash receptacles at boat launch sites	Boat launch sites; universally recommended	HIGH; a litter-free launch site is more attractive to boaters; encourages them to keep it clean	MODERATE; use of trash containers reduces volume of litter entering water	LOW per unit	LOW to MODERATE	Isolated public launch ramps may become household dump for residents in rural areas, a problem that has many states discouraging use of trash receptacles
Provide facilities for collecting recyclable materials	Marina-wide; universally recommended	MODERATE to HIGH; recycling decreases trash disposal costs; popular with the public; good for business image; scrap metals have highest cost recovery value	MODERATE; recycling has environmental benefits beyond the marina by reducing volume going to landfills, and as resource for manufacturers	LOW	LOW	Recycling is best done where provided through the municipality; clearly mark each receptacle for different type of recyclable

BMP Summary Table 9. (cont.) SOLID WASTE MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Encourage fishing line collection and recycling or disposal	Marina-wide; universally recommended	NONE to LOW; marina may be collecting trash it otherwise wouldn't have to dispose of	MODERATE to HIGH; entanglement in discarded or lost fishing line takes the lives of thousands of aquatic animals each year	LOW	LOW	Appropriate to combine with a public education effort
Provide boaters with trash bags	Marina work area; generally recommended	HIGH; encourages boaters to collect their trash and not discard it overboard, in the marina or at sea; reduces time spent on cleanup at marina	HIGH; all trash collected does not go into the water or blow around the marina as litter	LOW	LOW	
Use a reusable blasting medium	Marina work area; generally recommended	HIGH; cost savings can result by separating out dust and reusing blasting material	HIGH; significantly reduces volume of waste for disposal	MODERATE	MODERATE	More practical and cost-effective for high-volume boatyards, which do a lot of hull blasting
Require patrons to clean up pet wastes and provide an area specifically for dog walking at the marina	Marina-wide; universally recommended	HIGH; pet waste on docks, walks, and beaches is a serious complaint by marina customers; signs and use of pest waste disposal bags work and reduce complaints from other boaters; when dogs have a place to go, the docks and walks are cleaner; saves cost of staff time to clean up	HIGH; pet waste contains harmful bacteria, lowers water quality, and contaminates shellfish; BMP reduces the possibility that pet waste will enter the water; keeps waters clean	LOW	LOW	Signs should clearly mark the dog walking area as well as encourage patrons to clean up after their pets; providing disposable scoop bags encourages this practice and saves staff cleanup time.